

REMARKS

Claims 1, 2 and 6-12 are pending in the present application. Claim 1 has been amended to incorporate the subject matter of claim 13. Consequently, claim 13 has been cancelled. No new matter has been added by way of the above amendments.

Rejections under 35 U.S.C. § 103

Claims 1, 2, 6-10 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over EP '244 in view of US 2002/0070546 to Zwilling et al. (hereinafter "Zwilling").

EP '244 discloses a method of reusing an exhaust gas in a polyolefin production plant, comprising producing an exhaust gas containing residual monomers, nitrogen, and hydrocarbon solvent from a polymerization reactor (A), directing the exhaust gas to a flash chamber (B) and a stripping zone (C), directing exhaust gas to a pressure swing adsorption unit (D), selectively adsorbing hydrocarbons in the adsorber to produce purified nitrogen, regenerating the adsorber under reduced pressure with purified nitrogen product purge gas, reusing nitrogen product for pressurizing the regenerated adsorber and as stripping gas in the stripping zone, and recirculating separated hydrocarbons to the polymerization reactor. The adsorber can contain two columns in a pressure swing arrangement, each containing a single layer or multiple layers of adsorbent such as silica gel or zeolite.

EP '244 also discloses that typical adsorbents useful in the pressure swing adsorption unit (D) are zeolite molecular sieves, activated carbon, silica gel, activated alumina, etc., with or without metal ions at column 6, lines 37-40.

However, EP '244 fails to disclose an adsorbent layer formed from a hydrophobic silica gel, hydrophilic silica gel and synthetic zeolite laminated in the order in the direction of flow of the exhaust gas as recited in claim 1, as amended.

Zwilling discloses a process for recovering nitrogen and monomers from a polymerization reactor exhaust, comprising contacting with an adsorbent unit that preferentially removes light hydrocarbons from nitrogen, and reusing purified nitrogen as purge gas in the polymerization reactor, wherein the adsorbent unit contains multiple beds and a pre-treatment layer to adsorb water.

Zwilling also discloses silica gel, activated alumina, or silica gel and activated alumina in claim 9, and activated alumina, silica gel, activated carbon, zeolite, or combinations thereof in paragraph [0053] as an adsorbent material. However, Zwilling is silent with respect to a specific adsorbent layer as recited in claim 1 of the present application.

Thus, given the noted deficiencies in both EP '244 and Zwilling, the combination thereof cannot arrive at the presently claimed invention. Further, since the subject matter of claim 13 has been incorporated into claim 1, and claim 13 is free of this rejection, then claim 1 as amended is free of this rejection as well. Accordingly, EP '244 in view of Zwilling does not render the present invention obvious, within the meaning of 35 U.S.C. § 103(a).

Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over EP '244 in view of Zwilling and further in view of US 6,322,612 to Sircar et al. (hereinafter "Sircar").

The combination of EP '244 and Zwilling has been discussed above and the comments therein are likewise applicable to the outstanding rejection. Moreover, Applicants respectfully

submit that Sircar does not serve to cure the deficiencies noted in the EP ‘244/Zwilling prior art combination.

Sircar discloses a pressure swing adsorption process, wherein a regenerated adsorbent column is re-pressurized using product gas from another adsorption column or a storage vessel at feed pressure. However, Sircar is silent with respect to a specific adsorbent layer as recited in claim 1 of the present application. Moreover, the present invention yields unexpected results as exemplified in the working examples of the present specification as filed.

Thus, the cited references or a combination thereof never suggest the invention of present claim 1. That is, the constitution between the cited references and present claim 1 is different from each other and the present invention produces unexpected results as noted above. Therefore, present claim 1 as well as claim 2 and claims 6-12 that depend from present claim 1, possess non-obviousness over the cited references or a combination thereof. Further, it should be noted that the subject matter of claim 13 has been incorporated into claim 1. Since claim 13 is free of this rejection, it follows that this rejection should be withdrawn.

Applicants respectfully request reconsideration and withdrawal of the outstanding prior art rejections under 35 U.S.C. § 103(a). Moreover, in view of the foregoing, Applicants believe the pending application is in condition for allowance. A Notice of Allowance is earnestly solicited.

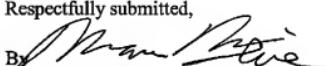
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Monique T. Cole, Reg. No. 60,154 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

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